AMENDMENTS TO THE SPECIFICATION

Please add the following new paragraphs immediately before page 2, line 5 of the current specification (immediately before "DETAILED DESCRIPTION").

<u>Figure 7 illustrates a signal modification method according to some embodiments.</u>

<u>Figure 8 illustrates a method of scaling a value associated with a finite impulse response filter tap to an echo amplitude according to some embodiments.</u>

<u>Figure 9 illustrates a device according to some embodiments.</u>

Please replace the paragraph beginning on page 6, line 3 of the current specification ("A FIR tap is...") with the following amended paragraph:

A FIR tap is typically <u>associated with</u> a pair of values representing a coefficient and a delayed input signal sample. A number of FIR taps may be designated as "N," and that number N may be used to determine an amount of memory needed to implement the filter, a number of calculations necessary to implement the filter, and any limitations regarding an amount of filtering that may be performed by a node, based on the capability of that node.

Please replace the paragraph beginning on page 6, line 27 of the current specification ("An equation for the output of the FIR filter...") with the following amended paragraph:

An equation for the output of the FIR filter at time n is y[n] = sum over i [where i = 0 to N-1] {x[n - i] * tap[i]} for some positive integer N. Convergence of the echo canceller FIR filter may be achieved by use of known signal processing methods. A function of the amplitude may be taken. For example, a stochastic gradient least mean square or recursive least squares may be taken of the measured amplitudes. [[The]] <u>Values associated with</u> taps of the filter should then be similar to the actual impulse response samples of the hybrid causing the echo. Thus the model of the echo may be created.

Please replace the paragraph beginning on page 8, line 1 of the current specification ("Thus, for example, ...") with the following amended paragraph:

Thus, for example, for a given voice channel the highest normal, or maximum amplitude of <u>a value associated with</u> any tap may be plus or minus 0.25 volts. Then the maximum possible

range of numbers that may be represented [[by]] <u>in connection with</u> a tap, assuming 16-bits of precision, is -32768 to 32767. The value 32767 may then be set to represent 0.25 volts and the value -32767 may be set to represent -0.25 volts. That provides a resolution of 0.25 / 32767, or 7.62 microvolts.

Please replace the paragraph beginning on page 8, line 24 of the current specification ("Figure 1 illustrates a method of ...") with the following amended paragraph:

Figure 1 illustrates a method of adaptively scaling <u>values associated with</u> echo canceller taps 100. That method of adaptively scaling <u>values associated</u> echo canceller taps 100 may find an optimal scale for echo amplitude to provide optimal resolution when that amplitude is to be held in a specific number of bits, which may be used in echo reduction. For example, when an analog signal is sampled and that analog signal includes an echo represented by an amplitude and the echo amplitude is to be identified by a FIR filter and held in a 16-bit word, then highest resolution may be achieved for the echo by scaling the actual <u>values associated with</u> echo canceller taps to the value that may be held in the 16-bit word.

Please add the following new paragraphs immediately after page 16, line 18 of the current specification (immediately before "While the systems...").

<u>Figure 7 illustrates a signal modification method according to some embodiments. At 710, an input signal is received (*e.g.*, an analog signal may be received at an input of a filter). At 720, a binary range is scaled. The binary range may be, for example, associated with one or more taps of the filter and be scaled to a value of a high amplitude of a portion of that input signal. Note that the binary range may be a range of binary values that may be represented by a plurality of bits. At 730, a value is stored. For example, a value corresponding to a second portion of the input signal may be stored in association with one of the taps according to the scale. At 740, the input signal is modified (*e.g.*, by an amount commensurate with the stored portion of the input signal). At 750, the modified signal is output (*e.g.*, from the filter).</u>

<u>Figure 8 illustrates a method of scaling a value associated with finite impulse response filter tap to an echo amplitude according to some embodiments. At 810, a range of values that may be held in binary in association with the tap is determined. At 820, a range within which a</u>

normal echo amplitude portion of an audio signal falls may be determined. At 830, the range of values that may be held in binary in association with the tap may be scaled to the range within which normal echo amplitude falls. At 840, an echo amplitude is measured. For example, the echo amplitude may be measured using the finite impulse response filter and storing a value corresponding to the magnitude of the measured amplitude associated with the filter tap based on the scale.

Figure 9 illustrates a device 900 according to some embodiments. In particular, the device 900 includes a signal modification element 910 coupled to a signal. The device 900 may also include a plurality of bits 920 coupled to the signal modification element 910 (and the plurality of bits may have a range of values that may be held therein). The device 900 may further include a scaling element 930 coupled to the signal modification element 910 and the plurality of bits 920. The scaling element 930 might, for example, scale a first amplitude measured at the signal modification element 910 to the range of values that may be held in the plurality of bits 920 and store a value that represents a second measured amplitude in the plurality of bits 920 according to that scale. In addition, the device 900 may include a signal reduction element 940 coupled to the plurality of bits 920.